



Advanced Test Equipment Corp.

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DMI 553

Digital Measuring Instrument
for AC and DC

Datasheet



HAEFELY

Current and voltage – our passion

Designed by



General Description

High Voltage measurements are done by connecting a specialized voltmeter (like the DMI 553) to the secondary unit of a voltage divider or to a current to voltage transducer (like a shunt).

The DMI 553 has been developed to measure, record and visualize events during dielectric and breakdown tests in high voltage applications according to IEC 61083-3:2020.

Measured values are shown as large digits on the computer screen using Haefely CaMS software. In addition, for pass/fail criteria during dielectric tests, Peak by $\sqrt{2}$ voltage is recorded & last value before breakdown is shown.

Graphical indications as scope function, FFT, datalogger or flash detection are included.

To facilitate easy comprehension, voltage divider ratio or shunt conversion factor (A/V) can be incorporated in the calculation to display parameters directly in kV or A

Fiber optic connection guarantees galvanic isolation between the operator and high voltage test lab, increasing safety.

The DMI can generate reports based on templates which can be printed or saved as PDF. Snapshots of the display or charts can be easily included in the reports..

| Features | Advantages |
|---|---|
| <ul style="list-style-type: none"> Designed to measure voltage and current in high voltage applications. | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Approved for dielectric tests as per IEC 61083-3 – as Peak/$\sqrt{2}$ is the required measured parameter. |
| <ul style="list-style-type: none"> Measures AC voltage and currents as RMS, Peak and Peak/$\sqrt{2}$ among others | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> The Peak/$\sqrt{2}$ required value during dielectric test is measured and recorded. |
| <ul style="list-style-type: none"> Measures DC voltage and currents as Mean, Peak and ripple. | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> One device, 2 applications, same device can be used for AC and DC application. |
| <ul style="list-style-type: none"> Flash detection with voltage indication | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Exact voltage just before failure is recorded and shown – if a failure arise during the test, failure indication, voltage measured before the flash and waveshape during the flash is shown and recorder for further analysis. |
| <ul style="list-style-type: none"> Real time scope and Frequency analysis FFT. | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Waveshape quality of the signal is continuously shown in the screen. |
| <ul style="list-style-type: none"> Additional AC/DC current channel (optional). | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Voltage and current readings in one single device – values can be simultaneously shown and recorded. |
| <ul style="list-style-type: none"> Computer controlled with Haefely CaMS graphical user interface | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Reduced training time - Modern SW makes the use of the device easier than ever. Operators can start using the device in minutes. |
| <ul style="list-style-type: none"> Optically decoupled from computer Compact, reliable, and EMC hardened design, IP50 | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> The galvanic isolation ensures the full safety of the operating personnel. With the DMI 553 and, there is no electrical connection between the control room and the high voltage test room. |
| <ul style="list-style-type: none"> Portable, Battery operated | <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Systems Voltage/Current Calibration can be easily done without needs of mains connection. |

Applications

- High voltage laboratories
- On site high voltage test
- Calibration laboratories

Scope of Supply

- DMI 553 measuring device
- FiberLink – LC to USB
- 20m LC fiber optic cable
- Battery with charger
- Connection accessories set - per channel.
- USB stick with software
- Manual (English)
- Quick start guide

Technical Data

Measured Values Voltage & Current⁽¹⁾

| | | |
|----|------------------|--|
| AC | Amplitude | $\pm\text{Peak}$, $\pm\text{Peak}/\sqrt{2}$, RMS_{fund} , Peak_{AVG} , RM , RM_{Corr} , Mean, Peak Factor, Rate of Rise |
| | Frequency | Fundamental frequency |
| | Harmonics | 1...20 th individual (Amplitude, Phase, Ratio), THC, THD |
| | Peak-hold values | Peak Flash, RMS Flash, Rate of Rise Flash |
| DC | Amplitude | Mean, Ripple, f_{Ripple} , Peak, Rate of Rise |
| | Peak-hold values | Peak Flash, RM_{Corr} Flash, Rate of Rise Flash |

(1) (External shunt not included)

AC & DC Measurement

| | |
|----------------------------|--|
| Input voltage | 0...400 V _{pk} |
| Input impedance | 1 MΩ 3 pF |
| Frequency | DC, 10...600 Hz (Fundamental , 20 th Harmonic ; 12 kHz) |
| Accuracy AC ⁽¹⁾ | $\pm(0.1\% + 10\text{ }0\mu\text{V})$ |
| Accuracy DC ⁽¹⁾ | $\pm(0.1\% + 1\text{ mV})$ |
| Averaging | 100 ms... 10 s (selectable) |
| Sampling rate | 48.8 kS/s |
| ADC resolution | 24 bits |
| Recording depth | 500 kPoints of data stream |

Interfaces

| | |
|-------------------------|--|
| 2 Voltage Inputs | 2 x BNC 50 Ohm (only one enabled in standard supply). |
| Fiber link adapter | Fiber-optic, HARTING connector to Ethernet 10/100 (data) and USB 2.0 (power/data) |
| Computer connection | USB 2.0 (in Fiber Link). |
| Digital outputs control | Ethernet port (at Fiber Link Adapter) to control an external digital I/O (not included) to generate hardware trigger signals after events (Flash, Trip). |

Indicators in CaMS Software

| | |
|-----------|---|
| Meters | Selectable number of meters (measured values) |
| Charts | Scope (Waveshape), FFT, Data logger |
| Graphical | Flash (breakdown), Trip (Overvoltage) |

Environmental, Mechanical and Power Supply

| | |
|------------------------|---|
| Operating temperature | -20 °C ... +55 °C |
| Storage temperature | -40 °C ... +85 °C |
| Humidity | 5 ... 95 % r.h., non-condensing |
| Dimensions (W x D x H) | 342 x 315 x 86 mm (13.5 x 12.4 x 3.4 in) |
| Weight | 1.3 kg (2.9 lb) |
| Protection class | IP 50 |
| Battery. | Lithium-Ion rechargeable battery; 11 V DC, 97.2 Wh. Operating time > 8h, charging time < 3h |

PC, Screen Resolution and Operation System Requirements

| | |
|-----------------------|--|
| PC min. configuration | Minimum: Intel Core i5 (3rd Gen) or better, 4 GB RAM, Ethernet / USB 2.0 Recommended: Intel Core i7 (10th Gen) or better, 16 GB RAM, Ethernet / USB 2.0 |
| Operation system | Windows 11™, 64-bit |

Applicable Standards

| | |
|---------------|--|
| General | IEC 61083-3 , IEC 60060 Parts. |
| CE conformity | EMC Directive 2014/30/EU and RoHS Directive 2011/65/EU |

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HAEFELY

Current and voltage – our passion



HIGH VOLTAGE



INSTRUMENTS



EMC

precision.
swiss made.